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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/752,881	12/28/2000	Venkatesan Murali	42390P10314	9418

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EXAMINER
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KNAUSS, SCOTT A

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/752,881

Applicant(s)

MURALI ET AL.

Examiner

Scott Alan Knauss

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 4-6, 8 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,168,537 (Rajasekharan et al, henceforth referred to as the '537 patent).

Regarding claim 1 '537 discloses in fig. 4 an apparatus having:

A base (top portion) having a first opening of a dimension suitable to pass a light emission therethrough

A first side wall coupled to the base and having a second opening (receiving lens #104) of a dimension suitable to pass a light emission therethrough

A second side wall #304 coupled to the base and having a reflective component thereon (see col. 7, lines 67-68)

The base, together with the first and second side walls defines an interior chamber with the reflective component disposed therein

A fiber connector (housing #102) extending from an exterior of the first side wall adjacent the second opening

3. Claims 1-3,7,9,10 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,454,470 (Dwarkin et al).

Regarding claim 1, Dwarkin discloses in fig. 4:

A base (coupled to surface #95) having a first opening of a dimension suitable to pass a light emission therethrough

A first side wall coupled to the base and having a second opening (#104) of a dimension suitable to pass a light emission therethrough

A second side wall #96 coupled to the base and having a reflective component thereon

The base, together with the first and second side walls defining an interior chamber with the reflective component disposed therein

A fiber connector (ferrule #100) extending from an exterior of the first side wall adjacent the second opening

Regarding claims 2 and 3, Dwarkin discloses first and second converging lenses #108, #110 disposed about the first opening and each defining a principal focus at the reflective component

Regarding claim 7, Dwarkin discloses:

An optical circuit substrate #84

A light emitting source #88 coupled to the substrate

An optical subassembly #80 couple to the optical circuit substrate and having an input, output and a reflective component #96, disposed in a path of the light emitting source

A fiber optic connector alignment guide (in this case the enlarged portion receiving ferrule #102, which can be considered a connector) coupled to the output of the subassembly

Regarding claims 9 and 10, Dwarkin discloses first and second converging lenses #108, #110 disposed about the first opening and each defining a principal focus at the reflective component

Regarding claim 12, Dwarkin discloses PCB #84, which can be used for both transmitters and receivers, (see col. 4, lines 43-54) and can thus be considered a "transceiver substrate"

Regarding claim 13, the light emitting source may be a VCSEL (see claim 11) which emits light in a perpendicular direction to the substrate (see fig. 4), and thus a VCSEL substrate #86 on which the VCSEL is mounted.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dwarkin et al.

Regarding claim 14, Dwarkin discloses a device and associated method in fig. 4, comprising:

Powering a laser #88 disposed in a substrate #86 coupled to a transceiver board (PCB #84, which can be used for both transmitters and receivers, see col. 4, lines 43-54)

Coupling an optical fiber #102 to an optical subassembly #80

Aligning the optical assembly over the board to capture the emitted light from the laser into the cable (the assembly would inherently need to be aligned in order to be fixed in the correct position)

Dwarkin does not, however, explicitly state that the fiber #102 is part of an optical cable. Nevertheless, Dwarkin discloses that it is known in the art to couple transmitters to cables (see col. 1, lines 14-20), and since it is well known to place fibers into cables for the purpose of protecting fibers over long transmission distances, it would have been

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obvious to one of ordinary skill in the art to package fiber #102 into an optical fiber cable for the purpose of protecting the fiber over its transmission distance.

Regarding claim 15, the fiber #102, and thus an optical fiber cable in which it is packaged, are at a position perpendicular to the path of emitted light.

Regarding claim 16, the optical assembly, after being aligned by ring #97 is coupled to the transceiver board (by being pushed into ring #97).

Regarding claim 17, while Dwarkin discloses aligning to capture emitted light, Dwarkin fails to disclose aligning to capture the light within one-half micron of the optical center of the emitted light.

Nevertheless, as it is well known in the art to optimize the alignment of optical elements with each other, particularly alignment of lasers with lenses and fibers, for the purpose of maximizing the in-coupling of light into such elements and the reduction of loss, one of ordinary skill in the art would have been motivated to align the optical assembly, in particular lens #110 to the exact center of the emitted light and within one-half micron, for the purpose of maximizing the coupling of light into lens #110 and fiber #102

Regarding claim 18, the laser is a VCSEL (see claim 11) which emits light in a perpendicular direction to the substrate (see fig. 4)

***Allowable Subject Matter***

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7. Claims 4-6,8 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 4 and 11, prior art fails to disclose a subassembly as set forth in claims 1 and 7, in which a first side wall and second side wall having a reflective component are coupled together such that the optical subassembly comprises a polygon body having both triangular and tetrahedral facets.

Regarding claim 5, prior art fails to disclose an apparatus as set forth in claim 1, having a connector being adapted to accept an LC connector.

Regarding claim 6, prior art fails to disclose an apparatus as set forth in claim 1, wherein the base has a third opening, the first side wall having a fourth opening, the third and fourth opening being aligned to receive a light transmission.

Regarding claim 8, prior art fails to disclose a system as set forth in claim 7, having an alignment guide adapted to be mated to an LC connector.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. On the accompanying PTO-892, the examiner has cited several other types of assemblies using reflective surfaces to couple optical elements together.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Alan Knauss whose telephone number is (571) 272-2350. The examiner can normally be reached on 9-5 Monday-Friday.




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9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

sak

A handwritten signature in black ink, consisting of a stylized 'S' followed by a long horizontal line.